ABSTRACT

The presence of water on the rocks can affect the mechanical properties of rocks such as compressive strength, tensile strength, and shear strength. In mining operations, both open pit and underground mining, the water content is very important to influence the changes of the safety factor, both on the slopes and opening of underground mining. The decreasing of safety factor cause failure that causes environmental damage, endangerment of life safety and loss in economic.

This research is performed to determine the effect of water to the cohesion and friction angle which are affect the shear strength on rocks. The limestone samples taken from the quarry in Lendah District, Daerah Istimewa Yogyakarta Province. The condition of samples on direct shear test is saturated, natural and dried.

Based on the laboratory tests, it is known that increasing 1% in water content due to decreasing cohesion of rock 4,56 kPa and friction angle of rock $2,78^0$. There for, the bonds between particle in limestone is getting weak along with the increasing of water content. To determine the influence of water content, so there is made a case study about slope stability analysis. This case is applied to design of single slopes with height 7m and angle 50^0. As the result the presence of water condition affect the decreasing of safety factor.